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A CORRELATIONAL STUDY OF READING COMPREHENSION IN
SPANISH AND ENGLISH

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Bilingual/Cross-Cultural Option

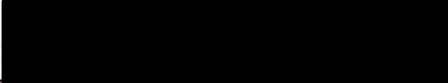
by
Kristine Dianne Nicholls
June 1999

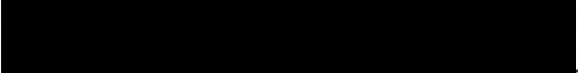
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June 8, 1999
Date

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ABSTRACT

This correlational study examined the relationship between Spanish reading comprehension and English reading comprehension scores for a group of 174 English Language Learners in an urban school district in Southern California. Spanish reading comprehension test scores in second grade and in English reading comprehension test scores in the sixth grade were analyzed to assess the degree of association between these two measures. A Pearson product-moment coefficient of $r = .513$ indicated a moderate positive correlation, with a p value = .01. Additionally, a simple regression analysis determined that with an $R^2 = .263$, approximately 26% of the variability in the English reading comprehension scores could be attributed to differences in the Spanish reading comprehension scores. These two measures of association indicate that there is a moderate positive relationship between Spanish reading comprehension in the second grade and English reading comprehension in the sixth grade for the same group of students.

Para Paul, mi querido esposo y todos mis queridos hijos

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Chapter One

Introduction

As long as there have been people seeking to communicate with others outside their immediate language group there has been a need for bilingual speakers. However, oral communication has its limitations which the advent of written communication sought to ameliorate. The written communication of many could be carried great distances by one messenger or could be preserved through the ages for generations to come. Subsequently, there arose a need to be able to extract meaning from written text, to comprehend its message. This task is further complicated when the written text is in a language other than the primary language of the reader. This dilemma has spawned the need to develop reading comprehension skills in a second language. The relationship between development in reading comprehension in the primary language and reading comprehension in the second language in the public schools has been a subject of much debate and research (Lee & Lemonnier Schallert, 1997; Medina, Jr. & de la Garza, 1989; Medrano, 1988; Miramontes, 1988; Royer & Carlo, 1991; Willig, 1985).

This need for second language reading comprehension and how it is addressed in the State of California is outlined in the background to this study. The current problem, that of declining opportunity to receive instruction in the students' primary language is highlighted in the section dedicated to the problem. The research question, along with

the definition of terms, immediately precede the theoretical framework that supports this correlational study.

Background to the Study

The population of English Language Learner (ELL) students in the State of California is burgeoning. In 1987, of the 4,717,108 students enrolled in California's public schools, 613,224 did not speak English well enough to understand what was going on in a monolingual English classroom. This group of students, comprising thirteen percent (nearly one out of every seven) of the students enrolled in California's public schools, struggled to meet the content-specific grade-level expectations established by the State and to acquire proficiency in English as a second language (Little Hoover Commission, 1993). These students were subsequently identified as English Language Learners. In 1994, barely seven years later, the number of English Language Learners had doubled, growing to 1,262,982 out of a total state public school enrollment of 5,930,864 students. English Language Learners now represented approximately twenty-one percent of the total school population, or 1 out of every 5 students (Macías, 1996). In response to this upward trend, the California State Department of Education, in their Bilingual Education Handbook (1990), identified the State's three goals for English Language Learner students as (a) self-concept development, (b) academic achievement, and (c) English language proficiency, in that order.

The educational program aligned with this framework provided primary language instruction for Spanish-speaking/English Language Learners until such time as they acquired enough proficiency in reading, writing, and speaking English to succeed in English-only instruction. Not only did this primary language instructional model respect the students as learners but it also allowed them to develop socially in a context of acceptance and value in which they were recognized for their intellectual ability as well as for their ability to express themselves in an educated manner in Spanish. This model allowed for positive self-concept development which met the first goal of the State of California's English Language Learner program.

Academically, the primary language instructional model was to provide English Language Learners the opportunity to establish a strong cognitive and academic base in their primary language prior to transitioning to English-only instruction. After establishing a firm foundation in literacy in their primary language and intermediate oral fluency in English, the students would then be transitioned to reading and writing in English, usually in the third grade or later. Providing primary language instruction would ensure that there would not be a deficit in the students' academic development as they were acquiring proficiency in reading, writing, and speaking English, thereby meeting the second goal of English Language Learner education in the State of California.

Finally, as literacy foundations were being developed in Spanish, the students simultaneously began developing similar foundations in English. Oral proficiency in English is usually the first to develop, followed by proficiency in reading and writing. Proficiency in reading, writing, and speaking English was the exit goal of this instructional model.

This program model of primary language instruction has been termed a "non-deficit" model, as the English Language Learners are able to advance academically in their primary language and not suffer a deficit in their academic development while continuing to develop their proficiency in English.

Problem

Even though the non-deficit instructional program model was the adopted standard for English Language Learners in the State of California in 1992, only 51% of these students were receiving instruction or support in their primary language (Little Hoover Commission, 1993). Chronic staffing shortages and the unavailability of quality Spanish-language curriculum and supplementary materials have made full implementation of this non-deficit instructional program model extremely challenging for many school districts across the State.

Resultantly, many English Language Learners failed to realize their full educational potential because of the

schools' inability to provide a full primary language program. The limited success of many English Language Learners to transition to English-only instruction has triggered concern among bilingual education's staunchest critics. In part because of the failure of many English Language Learners to acquire English literacy skills in a timely manner, the sociopolitical atmosphere in California has become markedly pro-English-only. With the passage of Proposition 227 in June of 1998 the voters in the State of California decided that the instructional priorities must change with English language proficiency taking precedence over academic achievement and self-concept development for English Language Learners.

To satisfy this new educational priority, English Language Learners in the State of California will be required to to be taught "overwhelmingly" in English regardless of their grade level or their level of English language proficiency. Each school district in the State of California has reconfigured its instructional program for English Language Learners in compliance with the new mandate. For the majority of English Language Learners in California they will be without primary language support and no longer able to become competent readers in their primary language prior to being required to become competent readings in English, thereby imperiling the self-concept development and the academic achievement of these students.

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This new "English first" mandate, by default, creates a "deficit model" instructional program for English Language Learners throughout California. Students whose academic skills in their primary language are just beginning to be developed will be denied the opportunity to develop their Common Underlying Proficiency (CUP), which is defined by Cummins (1981) as those literacy skills in the primary language that are applicable to the second language, giving second language learners a common base, a common underlying language proficiency, as they acquire like skills in a second language. This foundation, he maintains, is necessary for academic success in a second language.

Although many English Language Learners may possess early reading skills in their primary language, such as decoding and constructing simple meaning from words, these alone are not a sufficient foundation to develop the CUP, nor to guarantee success in acquiring reading skills in a second language. When students first learn how to "read", they have merely mastered the decoding process and comprehend the explicitly stated relationships present in the text of the reading selection.

More significant to the development of this foundation of interdependence is the depth of the reading skills in the primary language that a student is able to develop prior to transitioning to reading in English. The ability to derive deeper meaning from the text, to make inferences from them based on explicit and implicit information, to synthesize

and evaluate this information comes later in the student's development as a reader. These more advanced reading skills also require the student's ability to detect and appreciate subtle nuances in the language that are most easily developed in student's primary language.

Without a firm foundation in these in-depth reading skills in the primary language, the development of similar reading skills in the second language (English) is also threatened. Without a firm foundation in reading skills in English, the academic outcome for English Language Learners is put in jeopardy as they struggle to compete with their native English-speaking peers in the classroom setting and on standardized assessment measures. This situation leads to an underestimation of English Language Learners as learners and as individuals.

Statement of the Problem

Bilingual education programs historically have been based on the premise that subsequent literacy in English was dependent on initial literacy in the primary language. The new prioritization of acquiring proficiency in English first does not offer the opportunity for the full development of an English Language Learner's initial literacy, specifically reading comprehension, in their primary language. Without this foundation of reading comprehension in their primary language, these children face a problematic future, as they experience great difficulty in comprehending what they read

in their second language.

Research Question

How is the level of reading comprehension in the primary language, prior to transitioning, related to subsequent levels of reading comprehension in English for English Language Learners?

Definition of Terms

English Language Learner: a student whose parent has indicated that their child learned to speak a language other than English when they first began to talk, and whose proficiency in English limits their access to the core curriculum when academic instruction is in English only.

English reading comprehension: encompassing the reading comprehension skills tested in the reading comprehension clusters from the reading category on the "Stanford Achievement Test, Version 9" (SAT/9), given in English. The specific skills are content (the ability to construct meaning from any recreational, textual, or functional material read); process (the ability to comprehend explicitly stated relationships, recall specific detail, and identify action, reason, and sequence; the ability to interpret, infer, extend meaning, critically analyze explicit and implicit information, and to apply reading strategies in many different types of reading selections).

Spanish reading comprehension: encompassing the reading comprehension skills tested in the reading comprehension clusters from the reading category on the "Aprenda" Achievement Test, given in Spanish. The specific skills are content (the ability to construct meaning from any recreational, textual, or functional material read); process (the ability to comprehend explicitly stated relationships, recall specific detail, and identify action, reason, and sequence; the ability to interpret, infer, extend meaning, critically analyze explicit and implicit information, and to apply reading strategies in many different types of reading selections).

Theoretical Framework

The theoretical model that forms the premise for this study is the "Interdependence Hypothesis", postulated by Cummins (1981). As its foundation, this hypothesis posits that academic skills are interdependent from one language to another, and form an overlapping foundation of academic skills. From this overlapping foundation comes a pool of interdependent academic skills that are applicable in both languages, or "transfer". This pool of interdependent academic skills is an integral part of the Interdependence Hypothesis, and has been termed by Cummins as the "Common Underlying Proficiency" (CUP). In a non-deficit instructional model, the development of this common underlying proficiency, first in the primary language, then

in the second language, is the goal of the program, reaping benefits for the students as they (transition to instruction and learning in the second language.)

For example, if the student has developed many reading skills in their primary language, many of those skills will transfer to the student's second language when the student begins reading in the second language. Even though some of the aspects of the second language may be different (e.g. phonemes, syntax, grammar rules, etc.), reading comprehension skills are interdependent and many will transfer, as they are not language-specific in nature. This interdependence of skills between languages lends support to the theory that the transfer of reading skills from one's primary language to a second language is most likely not related to only general language ability in either of the languages, but to a transfer of learned reading strategies from the primary language.

Cummins, in his "Threshold Hypothesis" (1979), brings the problem of the development of reading comprehension in a second language into focus, citing the necessity of a minimum level of linguistic competence in the primary language so as to not trigger a deficit model in the acquisition and development of literacy skills in the second language. More specifically, if a student does not develop proficient, age-appropriate, grade-level literacy skills in their primary language, there will be a corresponding deficit in the acquisition of literacy skills in the second

language (Cummins, 1981).

The focus of this research study is to see if there is evidence of a relationship between the development of literacy skills, specifically reading comprehension skills, in the primary language and the subsequent development of reading comprehension skills in the second language for this group of subjects. These students had the opportunity to develop their reading comprehension skills in their primary language prior to transitioning to reading in the second language. Based on Cummins' two theories, the "Interdependence Hypothesis" and the "Threshold Hypothesis", the students' CUP should have been developed prior to transitioning to reading, writing, and speaking in English. Therefore, this development of the CUP should support a finding of a positive relationship between reading comprehension skills in Spanish and in English.

Chapter Two

The relationship between the development of literacy in one's primary and a secondary language has long been the subject of research and debate (Lee & Lemonnier Schallert, 1997; Medina, Jr. & de la Garza, 1989; Medrano, 1988; Miramontes, 1988; Royer & Carlo, 1991; Willig, 1985). Reading comprehension levels in both languages have been utilized as measures of literacy development by many who have studied this relationship (Lee & Lemonnier Schallert, 1997; Medina, Jr. & de la Garza, 1989; Medrano, 1988; Miramontes, 1988). However, reading comprehension is not an easily identifiable skill that can be isolated and observed. It is a synthesis of many reading strategies that are employed by the reader when faced with a passage of text that they wish to derive meaning from. This situation can become problematic when dealing with more than one language. For English Language Learners seeking to derive meaning from text in English, the question is: How is the level of reading comprehension in the primary language related to subsequent levels of reading comprehension in English?

Review of Related Literature: Early Studies

In a meta-analysis of studies on bilingual education, Willig (1985) focused on two questions: "What are the effects of bilingual education on second language learning?", and, "What are the effects of bilingual education on subject matter achievement?". Twenty-three

different research studies were analyzed. The primary subjects in each of the studies were English Language Learners who had participated in bilingual education programs, where primary language instruction was a hallmark feature of the instructional model in each of the individual studies.

For this meta-analysis, the most important adjustment to the data from each of the studies was in the area of effect sizes. Effect sizes were weighed, allowing studies equal weight in the computation of the analysis. Either a one-way analysis of variance or bivariate linear regression was used. A second level of statistical analysis identified variables that accounted for the largest portion of variance of effect size across studies.

The results of the meta-analysis indicated overall significant, positive effects for bilingual education programs, regardless of the language of the test given, in the areas of reading, language, mathematics, and total achievement (the aggregated score of all subject areas tested). More specifically, for tests given in English, the adjusted means were found to be significant (in favor of bilingual education) in reading, total language, math, and total achievement. The students who had participated in bilingual programs who scored high in reading comprehension in English tended to have higher scores in reading comprehension in Spanish. Again, there were findings of a positive relationship between reading comprehension levels

in the primary language and subsequent levels in English for English Language Learners.

Another study, undertaken by Medrano (1988) focused on program impact on reading and mathematics achievement over a three-year period. The non-random sample consisted of 278 students of Mexican-American descent from a city in Texas near the Mexican border. The subjects were from five different middle schools, in the 7th and 8th grades, and ranged in age from 12 to 15. Thirty-six percent of the total school population for the five schools was classified as English Language Learners. Comprehensive Tests of Basic Skills (CTBS) scores were available for each of the subjects from first through third grade. One hundred and seventy-two of the subjects participated in the bilingual program, receiving instruction in their primary language. The CTBS administered to these subjects in the 1st and 3rd grades established a proficiency level in reading and math in their primary language. One hundred and two subjects were taught in non-bilingual English-only programs. The sample was balanced for gender, as well.

The design of the study was a non-equivalent control group study. The first group was composed of those who participated in the bilingual education programs, and the second group was comprised of those who did not. CTBS reading and mathematics scores in Spanish and English for bilingual program participants, and in English for non program participants were collected from students' records

at their respective schools.

Regression analyses were done to explain post-test scores, with three independent variables: pretest scores, gender, and group. The results indicated that Spanish pretest scores had strong positive significant effects on English post-test scores in reading and math. Gender was found to be non-significant. Group, or program participation, had only a small, slightly positive effect on English reading post-test scores and a moderate, significant positive effect on English mathematics post-test scores. This study also supports a relationship between the reading comprehension levels in the primary language and in English for English Language Learners.

A study by Miramontes (1988) focused on the variables in the reclassification of English Language Learners. Although not the main thrust of the research study, two of the variables for reclassification that were evaluated and analyzed were the students' reading comprehension in their primary language in comparison to their reading comprehension in their second language.

The sample was taken from a district in California representative of large urban school districts in the state in which the district was implementing a bilingual program. The subjects were participants in the bilingual program selected from kindergarten through grade six. The total sample was 2100 students.

The study was a non-equivalent comparison group study. The groups for comparison were formed based on subjects' characteristics, including their primary language and English total reading achievement levels. Three types of data were collected on all students across all levels of the bilingual program: (a) norm referenced test scores (CTBS English and the CTBS Español total reading battery), (b) norm referenced test scores (CTBS Español vocabulary), and (c) descriptive program information (teacher questionnaire).

An analysis of variance (ANOVA) design was used. The ANOVA compared groups of students who were classified as high, medium, or low based on their mastery of Spanish reading curriculum tests. Each group's scores were compared to their total English reading achievement scores on the CTBS test. For all levels, the ANOVA results demonstrated that the high Spanish groups scored significantly higher in English total reading achievement than the low group. The analysis indicated that the high Spanish group scored significantly higher than the low group on the English reading assessment.

Correlation coefficient scores were calculated for the total reading scores in English and Spanish and the Spanish vocabulary subtest scores. For the CTBS English and the CTBS Español vocabulary subtests, the correlation coefficient was .66. The correlation coefficient was even higher between the CTBS Spanish and English total reading achievement scores, at .83. Even higher was the correlation coefficient between

the CTBS English total reading achievement and the CTBS Spanish vocabulary scores, at .86. Students performed significantly better in English if they were also in the high Spanish reading and vocabulary achievement group. The data supports a strong relationship between the development of reading comprehension and vocabulary skills in the primary language and subsequent levels in English for English Language Learners.

Review of Literature: Later Studies

In their study, Medina and de la Garza (1989) examined the relationship between the English reading achievement of Spanish-dominant English Language Learners and a non-equivalent English-dominant comparison group. Specific outcomes in English reading for the Spanish-dominant students who participated in a transitional bilingual program were compared with an English-dominant group of children of Mexican-American descent who participated in a traditional English-only program, receiving instruction in all subject areas in English. More specifically, the purpose of the study was to assess the reading achievement of the Spanish-dominant English-Learners to determine the impact that their reading achievement in Spanish had on their subsequent reading achievement in English.

The subjects for the study were from four elementary schools in Tucson, Arizona. They were similar in terms of ethnicity, grade level, duration of participation in their

respective programs, and socioeconomic status. The sample size for the Spanish-dominant English Language Learners was 25. The sample of English-dominant students was 118.

The design of the study was a two group, non-equivalent comparison group study. Only the reading vocabulary and reading comprehension subtests scores were analyzed from the Stanford Achievement Test (SAT) (Madden, Gardner, Rudman, Karlsen & Merwin, 1973), given at the end of first grade, and the California Achievement Test (CAT) (Tiegs & Clark, 1977), given to all subjects (regardless of language dominance) at the end of both the second and third grades. For the Spanish-dominant English Language Learners, the results from the total reading category were used from the administration of the CTBS Español (Finch, 1978). Three different analyses were done to compare the two groups.

The data comparing the mean scores of the Spanish-dominant versus the English-dominant group was analyzed using a 2 x 3 analysis of variance (ANOVA) with group (bilingual, English only instruction) and grade (first, second, third) as factors. The results indicated that the Spanish-dominant group performed significantly higher than the English-dominant group on the second grade CAT vocabulary subtest. However, no differences were found in the first and third grade scores. There was no differences found between groups in reading comprehension, regardless of grade level.

For the Spanish-dominant group, the mean scores from the SAT and CAT were analyzed using a 1 x 3 ANOVA with group (bilingual) and grade (first, second, third) as factors. The analysis demonstrated that English vocabulary achievement significantly improved between the first and the third grades, with the means advancing from below to above the national norms. Even though no significant comparisons were found for reading comprehension, the mean scores at the end of first grade were at national norms, and stayed high through the third grade. Regardless of whether the subjects were Spanish- or English-dominant, the scores on the English assessments were at or above national norms, and the Spanish-dominant subjects showed greater gains in vocabulary than their English-dominant counterparts, suggesting a relationship between the development of a strong vocabulary base in the primary language and its ability to affect the subsequent level of vocabulary in English.

The mean scores from the CTBS Español with the Spanish-dominant group were analyzed using a 1 x 3 ANOVA with group (bilingual) and grade (first, second, third) as factors. The scores indicated that there were no significant gains based on group or grade factors. However, achievement levels for the total reading achievement remained at or above national norms for the three years of the study.

In conclusion, this study showed that the Spanish-dominant group of English Language Learners who participated in bilingual education who received primary language

instruction equaled the English-dominant group in reading comprehension by the end of first grade, and was able to maintain that high level of comprehension throughout the entire three years of the study. With regards to vocabulary scores at the end of second grade, the Spanish-dominant students excelled beyond the level achieved by the English-dominant group. The irony of these results is that even though the Spanish-dominant group was instructed in their primary language, their performance was analyzed through their achievement in English. The results showed their performance superior to the performance of the English-dominant group.

The relationship between reading and listening comprehension skills in both the first and second language was the focus of the study by Royer & Carlo (1991). One of the purposes of the study was to determine if there was a correlation between reading comprehension skills in the students' first language and their subsequent level of reading comprehension skills in their second language. The subjects were sixth grade English Language Learners of Puerto Rican descent who spoke Spanish, and who were enrolled in a transitional bilingual program.

The study was a single group, pre-post test design. The assessment tool was the Sentence Verification Technique (Royer, 1990), developed in English and in Spanish. The study was done over a period of sixteen months. The reading and listening comprehension skills in Spanish were measured

halfway through and at the end of the students' fifth grade year (February and May, 1987), when the students were at the first level of the transitional bilingual program, and exhibiting strong skills in Spanish and possessing minimal skills in English. The final assessment was given in English at the end of the sixth grade year (June, 1988).

Correlation values were done for each skill from all three administrations of the assessments, and these were displayed on a pairwise correlation matrix. Multiple regression analyses were done in which the English listening and the English reading performance on the third administration served as criterion variables, and the Spanish and English listening and reading test performance on the first two test administrations were the predictor variables.

The results indicated that reading comprehension skills in the second language (from the second administration at the end of fifth grade) were most highly correlated ($r=.29$, p equal or $<.05$) with the reading comprehension skills in the first language at the third administration (the end of 6th grade), demonstrating an interdependence of skills between languages. These findings support a relationship between the reading comprehension level in the primary language and in English for English Language Learners.

The relationship between the second language proficiency and primary language reading ability as it pertains to reading comprehension in the second language was

examined in the study carried out by Lee and Semonnier Schallert in Korea (1997). The 809 subjects were native Korean speaking students, learning English as a second language at school. The subjects were drawn from nine randomly selected schools, and were in the 9th and 10th grades, ranging in age from 14 to 17. There were 438 males and 371 females. Their English language proficiency was determined by their score on the final exam of their English course. Each subject took three tests, an English language proficiency test, an English reading comprehension test, and a Korean reading comprehension test.

The English language proficiency test assessed vocabulary knowledge and grammatical sense in English. Test items for assessment of vocabulary knowledge were selected from the word meaning section of the American School Achievement Test (n.d.), Forms D and F (Primary Battery II), and the Stanford Achievement Test (1972-1973), Forms W and X (Primary II Battery). Test items for grammatical sense were taken from Johnson and Newport (1989), Linebarger et al. (1983), Gough (1993), and from the language section of the Stanford Achievement Test (1972-1973), Form K (Elementary Battery).

The English reading comprehension test included reading selections from the Metropolitan Achievement Test (1964-1971), Form F (Elementary). The Korean reading comprehension test was made up of passages from were taken from practice test of Korean language ability distributed by the

Educational Research Center in Korea for 9th- and 10th-graders.

A Pearson product-moment correlation procedure was done to analyze the three criterion measures, English language proficiency test, the English reading comprehension test, and the Korean reading comprehension test. A correlation of .75 was found between English language proficiency and English reading comprehension. The correlational relationship established between English language proficiency and Korean reading comprehension was .47. Between Korean reading comprehension and English reading comprehension, there was a correlation of $r = .55$. The level of significance for all correlations was at $p < .0001$.

Korean reading comprehension scores and English language proficiency scores served as the independent variables and the English reading comprehension scores served as the dependent variable in a multiple regression analysis. Subsequently, Korean reading comprehension ability and English language proficiency were significant predictors of English reading comprehension ability. An F statistic, $F(2, 806) = 645.3$, with a $p < 0.0001$, confirmed a high squared multiple correlation coefficient at $R^2 = .62$.

From the perspective of the various analyses performed, it appears that there is indeed a relationship between the development of reading comprehension in the primary language and reading comprehension in a second language. Even with English language proficiency identified as a second

independent variable, the resultant correlational relationship between these independent variables and the dependent variable (English reading comprehension), indicates a strong positive relationship between reading comprehension skills in the primary and the second language. Proficiency in the second language also plays a key role in this analysis, and is a factor that cannot be discounted in the development of reading comprehension skills in a second language.

Summary of Review

Across the studies examined, there appears to be a strong thread of interdependence present, supporting a relationship between the initial acquisition of reading comprehension skills in the primary language and their role in the subsequent development of second language reading comprehension skills. These studies, with their varying methods of examining and comparing primary language and second language reading ability and comprehension, have focused on students who participated in bilingual educational programs, who have received instruction in language arts in their primary language. They have also controlled for, among other things, (a) gender, (b) socioeconomic class, (c) number of years in a transitional bilingual program, (d) language dominance, (e) ethnicity, and (f) grade level.

The focus for the majority of the studies was reading achievement, either in whole or in part, with reading comprehension being singled out for analysis in all of the studies. The length of time between assessment in the primary language and in the second language ranged from a little over one year to six years. These studies highlight not only the relationship between reading in the primary and second language, but they also illuminate the methods that various researchers have identified for tracking and observing this relationship.

The results of the studies have shown that there is a more significant relationship over time, that the acquisition of reading comprehension skills in a second language is not something that is acquired overnight. The relationship between the reading comprehension level in the primary language will be stronger if the span of time between the assessment in the primary language and the subsequent assessment in the second language is longer, thus allowing a greater opportunity for acquisition of the reading comprehension skills in the second language. Just as there is a period of time over which reading comprehension skills are acquired in the primary language, a corresponding span of time is necessary in the second language to fully acquire corresponding reading comprehension skills. As such, the collection of data must span an extended period of time to be able to fully appreciate the relationship between reading comprehension levels in the primary language and

reading comprehension levels in the second language.

This research project will seek to replicate the findings of the highlighted studies by examining the relationship between English Language Learners' reading comprehension scores in their primary language prior to transitioning to language arts instruction in English, and their resultant reading comprehension scores in English four years later.

Chapter Three

Design

In order to investigate the relationship between an English Learner's reading comprehension score in Spanish and his/her subsequent reading comprehension score in English, a multiple-measures correlational study was conducted with a group of elementary-aged English Language Learners. The reading comprehension score in Spanish will serve as the predictor variable, and the subsequent reading comprehension score in English will serve as the criterion variable.

Data Needed

The data needed for this study were the reading comprehension score from the "Aprenda" achievement test taken in Spanish by the subjects at the end of second grade and the reading comprehension score from the "Stanford Achievement Test" in English taken at the end of sixth grade. There was a four-year time span between the reading comprehension assessment scores (1994-1998).

Subjects

The subjects of this study were 174 students from Spanish-speaking backgrounds who were identified as English Language Learners from multiple sites in a large urban district in Southern California. There were 89 female subjects and 85 male subjects. The students participated in the district-sponsored program for English Language

Learners. The instructional services in the program for English Language Learners featured several possible models at each site. The three most frequent models were a daily pull-out primary language program with a bilingual aide, a daily primary language program within the classroom with a bilingual aide, and a full primary language program provided within the classroom by a bilingual teacher. The subjects received primary language (Spanish) instruction in language arts through at least the end of the second grade. Depending on the instructional model available, they may have also received primary language instruction in social studies, science, and mathematics. All subjects were enrolled in the bilingual program and have been in attendance in the district continuously since the first grade. There was no record available for this study of the subjects' bilingual program participation in kindergarten, nor was there a record of when primary language instructional services were discontinued for the subjects.

Methodology

The instruments used in this study were the "Aprenda" achievement test in Spanish, and the "Stanford Achievement Test, Version 9" (SAT/9)(1997-1998) in English. Both are norm-referenced, standardized achievement tests published by Harcourt Brace Jovanovich, and are widely used by the education community to assess student achievement in various subject areas. The specific items that were used for this

project's analysis are the reading comprehension subtest scores from the total reading battery from each respective test. Spanish reading comprehension scores were taken from the Aprenda at the end of second grade and the English reading comprehension scores were obtained at the end of sixth grade.

Data Collection

The SAT/9 and Aprenda assessments were given by district teachers who have been trained to administer the tests. Each student took both of the tests at their respective school site, with their regular classroom teacher in charge of administering the exams. The Aprenda was taken by the subjects at the end second grade, in the spring of 1994. The SAT/9 was taken by the subjects in May of 1998, at the end of the sixth grade. The subjects' resultant scores from both tests were recorded and archived at the district office. A request for these scores was made to the district, and the data was subsequently made available for analysis.

Analysis

In order to examine and discuss the possible relationship between reading comprehension in the primary language and in the second language, two different analyses were done, a Pearson product-moment coefficient of correlation (r) and a simple regression analysis.

The Pearson product-moment coefficient of correlation

(r) was calculated to examine the relationship between the initial reading comprehension score in Spanish and the subsequent reading comprehension score in English. The calculation of the correlation coefficient will identify if a weak, moderate, or strong, positive or negative, relationship exists between the two reading comprehension scores.

A regression analysis was performed, and the coefficient of determination, the square of the correlation between a predictor and a criterion variable (R^2) was computed to determine the amount of variability among the English reading comprehension scores that can be attributed to differences in the Spanish reading comprehension scores.

A scatterplot was constructed to demonstrate visually the relationship between the independent variable, the Spanish reading comprehension score, and the dependent variable, the English reading comprehension score.

Chapter Four

Analysis of Data

Two separate analyses were performed on the data. A Pearson product-moment coefficient of correlation (r) was calculated to examine the relationship between Spanish and English reading comprehension scores. Additionally, a simple regression analysis, including the coefficient of determination (R^2), was conducted to examine the proportion of the variability in the English reading comprehension scores (criterion variable) that can be attributed to the differences in the Spanish reading comprehension scores (predictor variable). In this manner, it will be possible to analyze the strength of the possible relationship between Spanish reading comprehension and English reading comprehension.

Pearson Product-Moment Analysis

The Pearson product-moment coefficient of correlation (r) was calculated to determine the association between the means of the initial reading comprehension score in Spanish and the resultant reading comprehension score in English (see Table 1). The correlation coefficient was determined to be $r = .513$, with a p value of $= 0.01$. A coefficient of correlation of $r = .513$ indicates that a moderate positive correlation exists between the Spanish reading comprehension scores in the second grade and English reading comprehension scores in the sixth grade for this group of students.

Table 1

Pearson Product-Moment Correlation Coefficient

Variables:	Spanish Reading Comprehension Score	English Reading Comprehension Score
Spanish Reading Comprehension Score	1.000	.513
English Reading Comprehension Score	.513	1.000

Regression Analysis

A simple regression analysis was performed to examine the predictive function of Spanish reading comprehension scores on English reading comprehension scores (see Table 2). The coefficient of determination, the square of the correlation between a predictor and a criterion variable (R^2), was determined to be 0.263. This finding indicates that approximately 26% of the variability among the criterion variable (English reading comprehension) scores in sixth grade can be attributed to differences in the predictor variable (the Spanish reading comprehension) scores in the second grade. This demonstrates that Spanish reading comprehension scores can moderately predict scores in English reading comprehension for this group of students.

Table 2

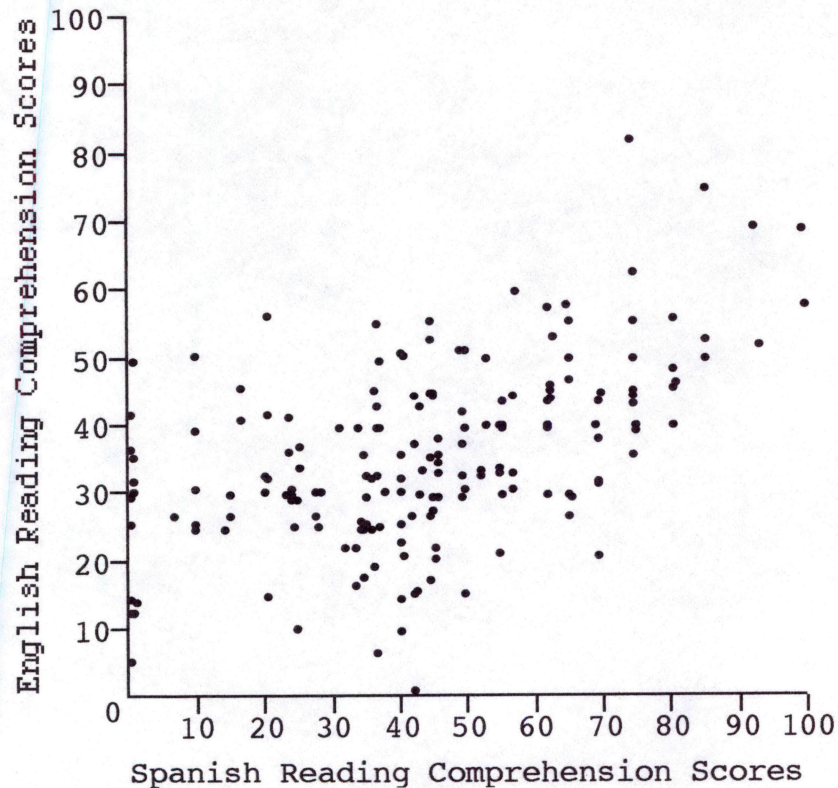
Regression Analysis Summary

Variables:	R	R^2	Adjusted R^2	Standard Error of the Estimate
<u>Independent:</u> Spanish Reading Comprehension Score <u>Dependent:</u> English Reading Comprehension Score	.513	.263	.259	11.3854

A scatterplot was constructed to visually represent the association between the Spanish and English reading comprehension scores (see Figure 1). The line of best fit pattern of the data points on the scatterplot demonstrates the moderate positive association between the Spanish reading comprehension scores in second grade and the English reading comprehension scores in sixth grade for this group of students as determined in the Pearson product-moment coefficient of correlation and the simple regression analyses.

Figure 1

Scatterplot of Spanish and English reading comprehension scores



Results

In answering the question, "How is the level of reading comprehension in the primary language, prior to transitioning, related to subsequent levels of reading comprehension in English for English Language Learners?", the results indicate that a moderate positive statistically significant relationship exists between the Spanish reading comprehension scores and English reading comprehension scores. Although a correlation coefficient of $r = .513$ indicates a moderate positive correlation, the confidence

level of the results is within acceptable limits, with $p = 0.01$. The coefficient of determination, with $R^2 = .263$, demonstrates that 26% of the variance in the means of the two variables, the Spanish and English reading comprehension scores, is accounted for as a result of the correlational relationship between them. The scatterplot visually represents this moderate positive correlational relationship as determined in the analyses.

Chapter Five

Interpretation

The results of the two analyses show that there is a moderate positive correlation between Spanish and English reading comprehension scores. This finding supports the results that were highlighted in the various studies cited in Chapter 2, in which varying levels of correlation were found, depending on the methods and instruments used for each study. However, the underlying thread that weaves all the studies together is the finding of a positive correlation in each of the studies, regardless of extraneous factors.

The coefficient of determination, R^2 , was found to be 0.263, indicating that approximately 26% of the variability among the English reading comprehension scores can be attributed to the differences in the Spanish reading comprehension scores. The statistical analysis indicates that for 26% of English Language Learners, their initial ability in Spanish reading comprehension had a positive impact on their subsequent ability in English reading comprehension. What this highlights is that a good foundation in Spanish reading, specifically reading comprehension, will positively influence the subsequent level in English reading comprehension for a good portion of English Language Learner students.

Conclusions

It can be concluded that there exists a moderate positive relationship between the Spanish and the English reading comprehension scores for English Language Learners. As demonstrated, the opportunity for English Language Learner students to develop a good foundation in reading in Spanish prior to learning to read in English has a positive effect on their resultant success in English reading.

Implications

The opportunity for English Language Learners to develop literacy skills in their primary language is of vital importance to their eventual success in developing literacy skills in English. Specific to this study, the finding of a moderate positive relationship between reading comprehension skills in Spanish and reading comprehension skills in English supports Cummins' "Interdependence Hypothesis" (1981), which states that academic skills are interdependent from one language to another and form an overlapping foundation of academic skills, or "Common Underlying Proficiency". This was evident for 26% of the English Language Learner students in this study, as the opportunity to develop Spanish reading comprehension skills positively influenced the development of reading comprehension skills in English.

English Language Learner students must be given the opportunity to build this foundation of literacy skills in

their primary language foundation prior to being required to transition to instruction in English in order to be successful. Cummins highlighted this need in his "Threshold Hypothesis" (1979), in which he maintained that without a firm foundation in the primary language, a strong foundation in the second language cannot be built. A subsequent deficit model in the acquisition of the second language will result, inhibiting the ultimate goal of proficiency in English for English Language Learners.

The State of California, its policy-setting educational hierarchy, local school districts, and the general public cannot and must not ignore the research and analyses done on data from English Language Learners. How the English Language Learners are to achieve the goal of proficiency in English should be based on research findings and proven pedagogical methods, not on political imperatives. Therefore, educators must advocate the necessity of the initial development of literacy skills, specifically reading comprehension skills, in the English Language Learners' primary language in order to accomplish the State of California's exit goal of ultimate proficiency in English for English Language Learners.

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